tral Doppler (E, A) and lateral and septal mitral annular systolic (Sa) and diastolic (Ea) velocity measurements and their mean (Samean and E/Eamean). Age and LVEF were 56±11y and 28±8%; 39% had ischemic cardiopathy; 75% were NYHA ¾; 48% had increased PCWP>15 mmHg. Correlations between PCWP and the three tested E/Ea ratios ranged from 0.33 to 0.47 and E/Ealat showed the best (all p<0.001). Fifty-five patients (44%) had an elevated E/Ealat >15. Specificity and sensitivity of E/Ealat for increased PCWP were globally poor (76%; CI95[65-86] and 58%; CI95[45-71%]). The cohort was sub-divided into quintiles accordingly to Salat velocity. In patients with higher lateral Salat>4.5 cm/s (three upper quintiles, N=78), specificity of E/Ealat for increased PCWP was 91% CI95[:78-97], significantly higher (p<0.01) than in the two lower quintiles with Sa<4.5 cm/s (39%; CI95[17-64]). In contrast, sensitivity of E/Ealat was not significantly different among groups of Salat. When considering E/Ealat as a continuous variable, area under the ROC curve (AUC) was 0.72 (0.63-0.79) in the entire population. AUC was better in the group with Salat >4.5 cm/s (0.82 [0.71-0.92] than the group with Sa≤4.5 cm/s (0.54 [0.38-0.7]); with significant difference between the two AUCs (p=0.005). Specificities, sensitivities and AUCs of, E/Eamean, and E/Easept after stratifying for Salat values were lower than those observed with E/Ealat.

Conclusion: Our data suggest that E/Ealat may be a reliable tool to identify patients with normal LV filling pressure in severe systolic HF if longitudinal contractility is preserved (Salat>4.5cm/s).

164

New parameters for the quantification of the right ventricle systolic function: a prospective MRI study

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Purpose: Cardiac MRI is the gold standard for studying the right ventricle (RV) systolic function, a well-established prognosis determinant of cardiomyopathies. We sought to identify new reliable and less time consuming parameters than endocardial delineation, for assessing right ventricular systolic function.

Methods: Forty three unselected patients (31 males, 12 females) aged 19-81 years who were referred for cardiac MRI in a University Hospital center were included consecutively.

MRI Right and Left Ventricle Ejection Fraction (RVEF, LVEF) were measured by defining the contour of the endocardium. In a subsequent post-treatment investigation, we blindly measured MRI TAPSE (mTAPSE), and the RV diastolic and systolic diameters (dD, sD) at basal and medial levels in a short axis view. We then calculated new parameters we called Fractionnal Basal Diameter Change FBDC=(basal dD – basal sD)/ basal dD, and Fractionnal Medial Diameter Change (FMDC) calculated by the same method at a medial level.

Results: Thirty five patients had a RVEF>40% (group A), 8 patients (19%) had a RVEF<40% (group B).

MRI stroke RV and LV volumes showed very strong correlations (r=0,87 p<0,0001), thus MRI RVEF was a reliable measurement.

In group A, FBDC was 0.23+/–0.08, FMDC was 0.22+/–0.11 and mTAPSE was 24 +/–9 mm. In group B, FBDC, FMDC and mTAPSE were significantly lower than in group A (FBDC=0.14 +/–0.11 p=0.01, FMDC=0.13+/–0.11 p=0.04, mTAPSE=16+/–5 mm p=0.02).

Conclusions: New regional right ventricle parameters correlated well with MRI RVEF especially at a basal level. These parameters appeared more significant than TAPSE, a well-established parameter of systolic right ventricle function in echocardiography.

165

Comparison between echocardiographic (TTE) and cardiac magnetic resonance (CMR) parameters of left ventricular afterload and remodeling

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Objective: To investigate the value of TTE and CMR in the assessment of left ventricular (LV) adaptation to an increased afterload and to analyze the effect of the on LV systolic function.

Background: To maintain an effective LV-arterial coupling, the LV adapts to the increased afterload by changing its geometry with subsequent hypertrophic-remodelingresulting in a reduction of the effective systolic myocardial wall stress.

Methods: We studied a group of 49 subjects: 35 healthy subjects (group I, 38±13 years) and 14 patients with aortic valve stenosis (group II, 77±9 year, valve area=0.75±0.18 cm²). We calculated: 1)TTE parameters of wall stress (SMWS, 10^3dyn/cm²), remodeling (h/r), and systolic function (LVEF ejection fraction (2D-EF, %), 2D longitudinal global strain (global-ε, %); 2)CMR end-diastolic mass to volume ratio (LVM/EDV, g/ml) as well as the 3D systolic myocardial wall stress (3D SMWS, 10^3.N/m²) combining LV geometry(3DLVgf) and arterial load. The Statistical analysis was performed by Pearson correlation coefficient and t-test.

Results: LVEF was homogeneous in 2 groups (I=64%, II=62%, p=0.69). Significant difference was found between the 2 groups in terms of SMWS, global-ε and h/r (p<0.05). Furthermore, while no correlation was found between TTE and CMR parameters in the group I, significant correlations were found in group II for the comparisons: 1-TTE and CMR parameters of LV remodeling (LVM/EDV and h/r), (r=0.87, p=0,0005); 2-CMR LV geometry factor (3DLVgf) and TTE 2D global-ε(r=–0.79, p=0,005); 3-CMR SMWS and TTE 2D global-ε(r=–0.8, p=0,005); 4 – CMR SMWS and TEE SMWS (r=0.78, p=0,0005).

Conclusion: Increased afterload results in LV remodeling with good correlation between CMR and TEE parameters. Its effect on LV function was revealed by the good negative correlation between CMR SMWS and TTE-global-ε, which was found despite the preserved LVEF. Parameters of longitudinal systolic dysfunction may have a clinical interest in management of patients with preserved LVEF as a predictor of heart failure.

Keywords: LV remodeling, systolic myocardial wall stress, global longitudinal strain, echocardiography, cardiac magnetic resonance

166

Importance of left ventricular remodelling and regional wall motion abnormalities in the occurrence of functional ischemic mitral regurgitation

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Introduction: Functional ischemic mitral regurgitation (IMR) is common in patients with ischemic left ventricular dysfunction after myocardial infarction, and significantly worsens prognosis. The aim of this study is to determine the relative importance of the global and regional left ventricular (LV) remodelling in the occurrence of IMR.

Methods: 81 patients (mean age=61±11 years) admitted with acute myocardial infarction (AMI) were screened. Patients with atrial fibrillation and organic valvular diseases were excluded from the study. Echocardiography (two-dimensional and Doppler echocardiograms) was performed in the first week after admission. The 81 patients were divided in 2 groups: with IMR (group 1=39 patients) and without IMR (group 2=42 patients). LV volumes were calculated by apical biplane Simpson's rule. The LV wall-motion score (WMS) index was obtained in a 17 segment model according to established

▶